

April 8, 2005

APPLICANT: Framatome, ANP

PROJECT: EPR DESIGN PRE-APPLICATION REVIEW

SUBJECT: SUMMARY OF MARCH 24, 2005, CATEGORY 1 MEETING WITH
FRAMATOME ANP TO DISCUSS THE EPR PRE-APPLICATION REVIEW

On March 24, 2005, a public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) staff and representatives of Framatome ANP (Framatome). The purpose of this meeting was to discuss Framatome's plans for pre-application review of the EPR reactor design. A list of meeting attendees is included as Attachment 1. Attachment 2 contains handouts Framatome provided at the meeting (ADAMS Accession Number ML050840022). A summary of the meeting is included below.

Framatome refers to the design only as the EPR in its recent correspondence and marketing materials, no longer referring to it as the "European Pressurized Reactor."

The NRC staff opened the meeting briefly reviewing recent correspondence between Framatome and the NRC.

Framatome informed the NRC in a December 2, 2004, letter of its intent to pursue certification of the EPR, stating that further information would be provided in February 2005. The NRC staff responded to this letter on January 14, 2005, requesting that Framatome address how it believes the EPR pre-application review addresses the Commission's policy statement on advanced reactors (51 FR 24643). The staff's letter also noted that priority for resources will be given to activities clearly aligned with a domestic partner.

Framatome provided additional details on its plans for the EPR pre-application review in a February 8, 2005, letter. This letter proposed a series of meetings with the staff to familiarize it with the EPR's design characteristics and to discuss other topics of interest. The March 24, 2005, meeting was intended to initiate the pre-application discussions and plan for future interactions.

Framatome's presentation began with a review of their organization supporting new plant deployment in the United States (U.S.) and an overview of the EPR project. Framatome plans to standardize the EPR design as much as possible, with consideration of codes, standards, and regulations in each country where it is deployed. Therefore, the design being proposed for deployment in the U.S. is substantially the same as that being built in Finland and proposed for France and China, including a double-walled containment, four 100 percent capacity engineered safety feature trains, and a corium spreading area to mitigate severe accidents. Framatome is establishing design authority for the EPR planned for US deployment within this country.

Framatome then gave an overview of the EPR design. The EPR is an evolutionary design drawing upon accumulated experience with existing pressurized water reactors. Framatome believes the design provides for prevention and mitigation of severe accidents, and improves defense-in-depth.

Framatome briefly discussed its design philosophy for mitigation of small-break loss-of-coolant accidents and steam generator tube ruptures. The EPR design uses medium head safety injection pumps with a discharge pressure below the main steam safety valve setpoint, along with a safety-related cooldown system to mitigate these accidents. This system is intended to preclude challenges to the main steam safety valves during a steam generator tube rupture.

Severe accident mitigation features include the corium spreading area mentioned above, along with a depressurization system intended to prevent high-pressure vessel failure. The corium spreading area can be passively cooled for 12 hours using water from the refueling water pool located within containment. While the containment is designed to prevent hydrogen combustion, it is designed to withstand a hydrogen deflagration. The annulus between the containment walls is maintained at a negative pressure to capture radioisotopes and provide for filtered releases.

The probabilistic risk assessment for the Olkiluoto Unit 3 reactor in Finland projects a core damage frequency of $1.4\text{E-}6$ per reactor year from all causes, including site-specific loss-of-heat sink scenarios. Framatome stated the core damage frequency for the U.S. version of the EPR is expected to be less than $1.0\text{E-}6$ per reactor year.

Framatome's stated pre-application goals are to ensure the design certification application application is high-quality, contains no unexpected issues, and to identify cost and schedule requirements for the design certification review. Framatome does not expect that the EPR review will require any changes to NRC regulations or Commission policy. Framatome also believes that, due to the similarity of the EPR to existing designs familiar to the NRC, there is no need for research or testing to resolve technical issues to demonstrate the reactor's capability for design basis events.

Framatome expects Phase 1 of the pre-application review to consist of a series of meetings with NRC so that NRC resources necessary to support subsequent activities can be identified, and so that schedules can be mutually agreed upon. Phase 2 will consist of NRC review of topical reports on the critical heat flux correlation, transient and accident analysis methodology, and severe accident evaluations. Phase 2 may also include additional topics which could arise in the course of discussions with NRC. Framatome plans to request safety evaluations for the three topical reports and an estimate of NRC resources and schedule for the design certification submittal.

Meeting participants discussed what future meetings could be beneficial in Phase 1. The next meeting is tentatively scheduled for July 2005 to discuss the plant design basis and probabilistic risk assessment. Framatome was encouraged to provide information in advance of future meetings to give the NRC staff an opportunity to prepare for those interactions. Framatome plans to submit an EPR design description in August 2005 for the staff's information and reference, not for formal review or approval.

A design certification application is planned for late CY 2007 after completing engineering necessary to demonstrate compliance with US codes and standards and NRC regulations.

Framatome emphasized that its goal is deployment of the EPR in the US. Its planned pre-application and design certification efforts are not intended to support marketing outside the US. Framatome also stated that the length of the pre-application period is controlled by the engineering effort required for conversion to US standards and for development of the design certification submittal, not by the need for significant NRC involvement.

Please direct any inquires concerning this meeting to Joseph Williams at 301-415-1470, or jfw1@nrc.gov.

/RA/

Joseph Williams, Senior Project Manager
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Office of Nuclear Reactor Regulation

Project No. 733

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Attendees

Framatome ANP Meeting With NRC Staff

EPR Pre-application Review

March 24, 2005

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Laura Dudes	NRC
Y. Gene Hsii	NRC
Mark Melnicoff	NRC
Dariusz Szwarc	NRC
Edward D. Throm	NRC
Kent Welter	NRC
Joe Williams	NRC
Andy Cook	Areva
Michael McMahon	Areva
John Polcyn	Bechtel Power
Joe Mihalcik	Constellation Energy
Richard Szoch	Constellation Energy
Carl Berger	Energetics
Rick Bonsall	Framatome ANP
Ran Ganthner	Framatome ANP
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Toney A. Mathews	Framatome ANP
Marty Parece	Framatome ANP
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